

## METHOD OF MAKING NANO-PARTICLES OF SELECTED SIZE DISTRIBUTION

### ABSTRACT

A process for forming a nanoparticle composition is provided. The process includes polymerizing conjugated diene monomer in a hydrocarbon solvent to form a first reaction mixture, and charging excess alkenylbenzene monomer and anionic catalyst to form mono-block and diblock polymers. Micelles of said mono-block and  
5 diblock polymers are formed, and at least one crosslinking agent is added to cross-link the micelles and form nanoparticles. The nanoparticles preferably have a poly(alkenylbenzene) core and an outer layer including monomer units selected from the group consisting of conjugated dienes, alkenylbenzenes, alkylenes, and mixtures thereof, and a size distribution of between about 1 and 1000 nm.

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